

What is claimed is:

1. A method of inhibiting translation or transcription of a target nucleic acid sequence encoding a protein involved in smooth muscle migration and/or proliferation within a blood vessel of a mammal suffering of vascular injury, which comprises the step of: directly depositing onto a surface or within the blood vessel at least one oligonucleotide complementary to the target sequence, in an amount sufficient to penetrate cells of the blood vessel, to hybridize with said target nucleic acid, and to inhibit intracellular translation or transcription of said target sequence, said protein comprising platelet-derived growth factor β -receptor subunit (PDGFR- β).
2. The method of claim 1 which results in prevention of restenosis.
3. The method of claim 1 wherein the oligonucleotide is in a physiologically compatible solution and wherein it is applied by injection.
4. The method of claim 3 wherein the solution is applied to the tissue using an infusion pump, stent or catheter.
5. The method of claim 1 wherein said at least one oligonucleotide further comprises an antisense sequence complementary to the sequence of a gene selected from the group consisting of c-myb, NMMHC and PCNA.
6. The method of claim 1 wherein said oligonucleotide sequence comprises about 14 to 38 nucleotides bases.
7. The method of claim 1 where said at least one oligonucleotide is treated to render it resistant to degradation or extension by intracellular enzymes.
8. The method of claim 7 wherein the treatment comprises substituting at least one backbone phosphodiester linkage of the oligonucleotide with a linkage selected from the group consisting of phosphorothioate, methylphosphonate, sulfone, sulfate, ketyl, phosphorodithioate, various phosphoramidate, phosphate ester, bridged phosphorothioate and bridged phosphoramidate linkages.

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9. The method of claim 7 wherein the treatment comprises capping a 3'-nucleotide with a structure resistant to addition of nucleotides.
10. The method of claim 1 wherein said at least one oligonucleotide is delivered to the blood vessel in a concentration of between approximately 30 and 3000 µg oligonucleotide per square centimeter of tissue surface area.
11. The method of claim 1 wherein the target nucleic acid sequence comprises a mRNA.
12. The method of claim 11 wherein the oligonucleotide is incorporated into a carrier.
13. The method of claim 12 wherein the carrier comprises an implantable matrix.
14. The method of claim 12 wherein the carrier comprises a hydrogel.
15. The method of claim 14 wherein the hydrogel comprises a material which is liquid at a temperature below 37° C.
16. The method of claim 15 wherein the hydrogel material comprises a polyoxethylene oxide and polypropylene oxide copolymer.
17. The method of claim 16 wherein the copolymer comprises from about 10 to about 80% by weight polyethylene oxide and from about 20 to about 90% polypropylene oxide.
18. The method of claim 17 wherein the polymer comprises about 70% by weight polyethylene oxide and about 30% by weight polypropylene oxide.
19. The method of claim 1 wherein the oligonucleotide is deposited extravascularly.
20. The method of claim 1 wherein said oligonucleotide is deposited onto or beneath an adventitial surface of the blood vessels.

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